

A Climate Change Agency for London



LondonClimateChangeAgency

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Chief Executive Officer
London Climate Change Agency Ltd

London Climate Change Agency

□ Practical delivery agency implementing climate change projects in:

- Energy
- Water
- Waste
- Transport



Municipal company 100% owned by London Development Agency

LONDON
DEVELOPMENT
AGENCY



Summary of Energy, Environmental and Financial Savings 1 April 1991 to 31 March 2004

Energy Consumption Savings	244,408,155 kWh	48.6% saving
Carbon Dioxide CO ₂ Emission Savings	142,013 Tonnes	77.4% saving
Nitrogen Oxides NO _x Emission Savings	439.0 Tonnes	76.6% saving
Sulphur Dioxide SO ₂ Emission Savings	1,480.84 Tonnes	90.9% saving
Water Consumption Savings	412,855,000 Litres	43.8% saving
Savings in Energy and Water Budgets saving	£5,388,721	31.36%

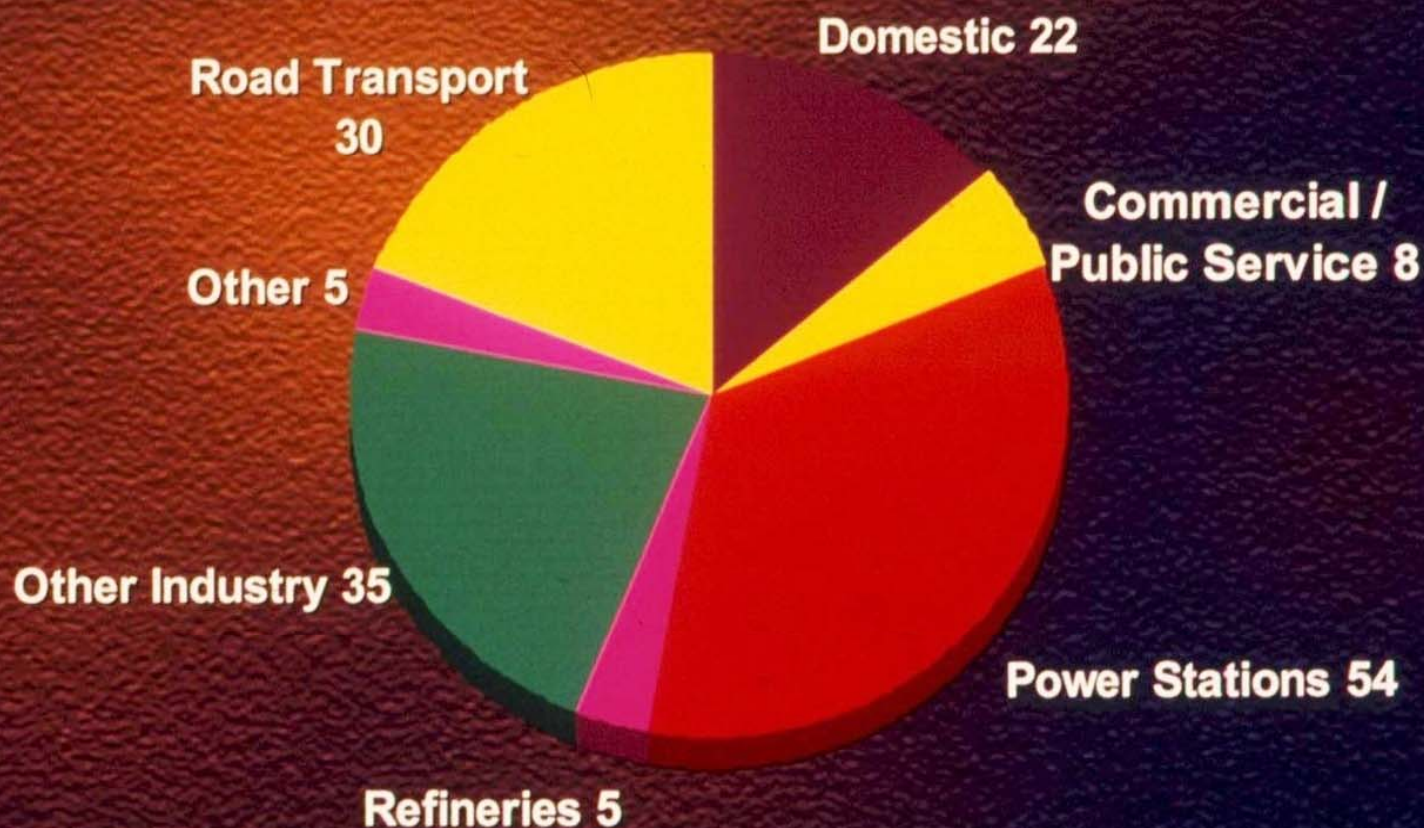
Notes:

1. The Council's target was to reduce energy consumption by 40% within 10 years from 1991/92 to 2000/01.
2. The above savings are for corporate property and housing stock, where the Council pays the energy and water bills, and exclude Council tenant and private sector savings achieved by the Housing Energy Efficiency and Sustainable Energy Programmes.



the Greenhouse Gas Programme – CO₂

UK Emissions in 1990 (MtC) by emission sources



emissions expressed in terms of weight of carbon emitted. In terms of weight of CO₂ emitted, the figures should be multiplied by 44 and divided by 12. Most of the figures in these charts are based on constant emission factors.

Centralised power generation

□ Annual Thermal Efficiencies of UK Power Stations¹

■ Coal	36%
■ Gas	46%
■ Nuclear	38%

□ Annual Grid Losses²:

■ Transmission	2%
■ Distribution	7%

1. DTI Digest of UK Energy Statistics

2. Ofgem

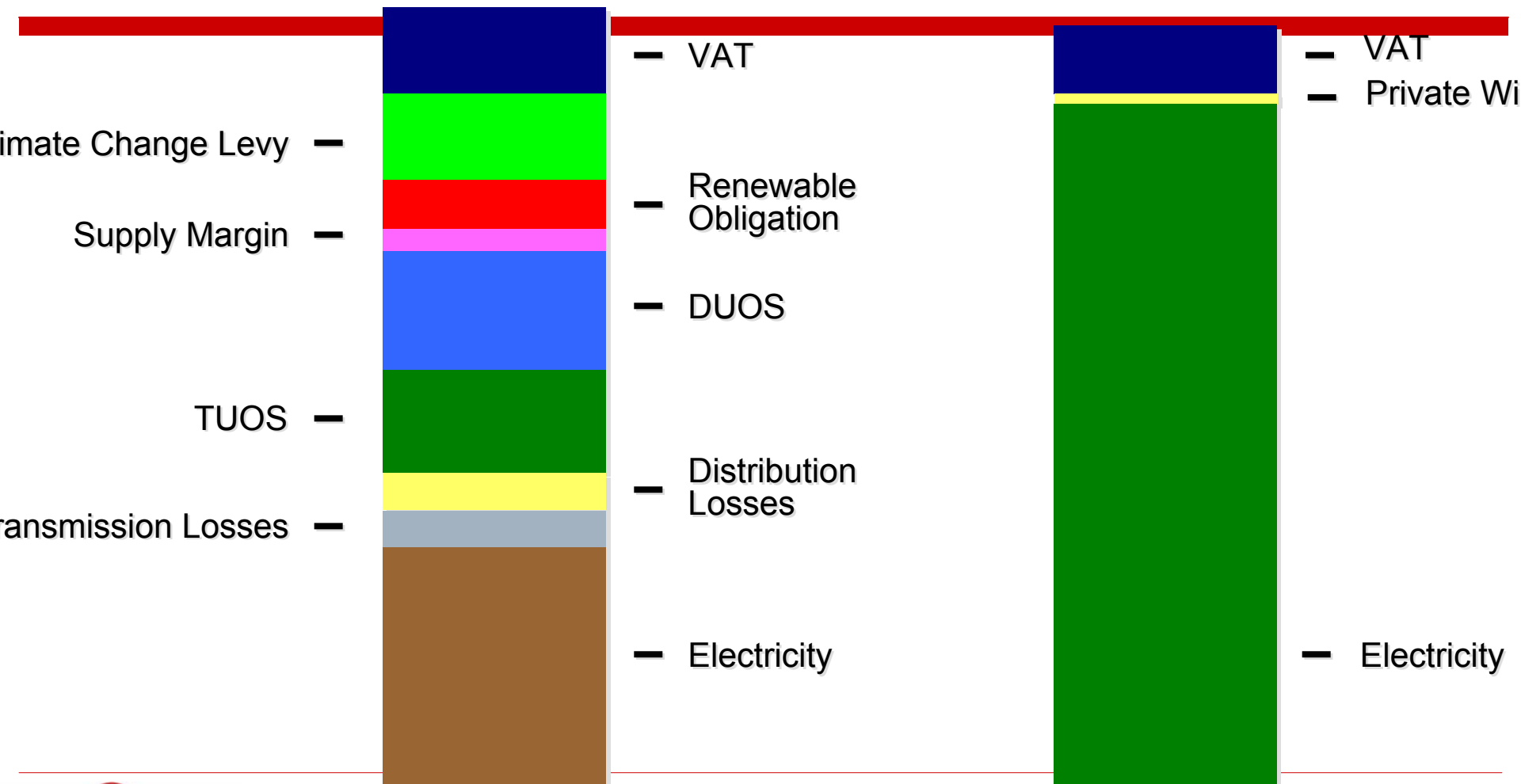


Decentralised energy generation

- ❑ Powering London into the 21st Century¹:
- ❑ High Decentralised Energy Scenario from 2005 to 2025:
 - 33% Reduction in CO2 Emissions.
 - 35.5% of London's Energy Demand.
 - 15% Reduction in Natural Gas Consumption.
 - Fuel Flexibility (inc. Renewables).
 - Local Security of Supply.

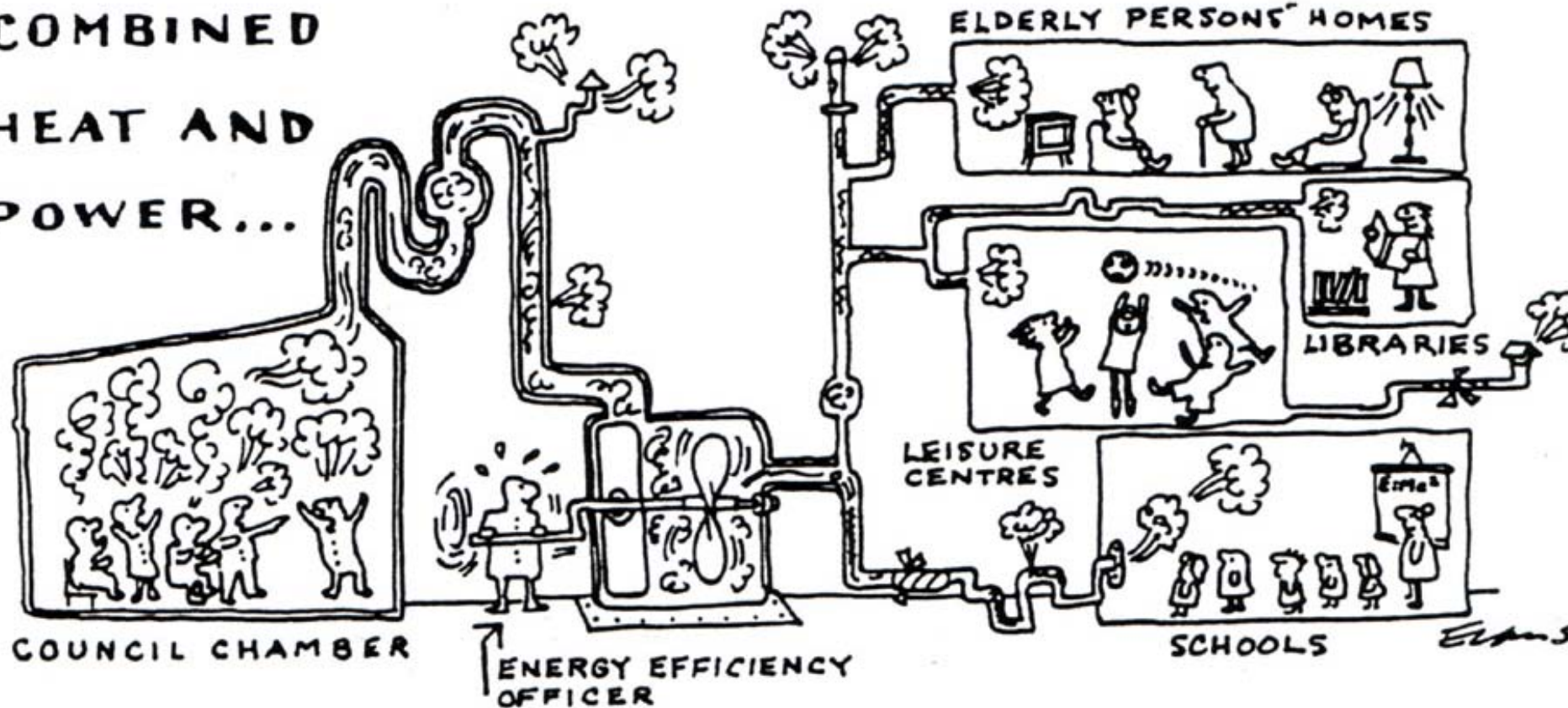
1. Greenpeace Powering London into the 21st Century – March 2006.

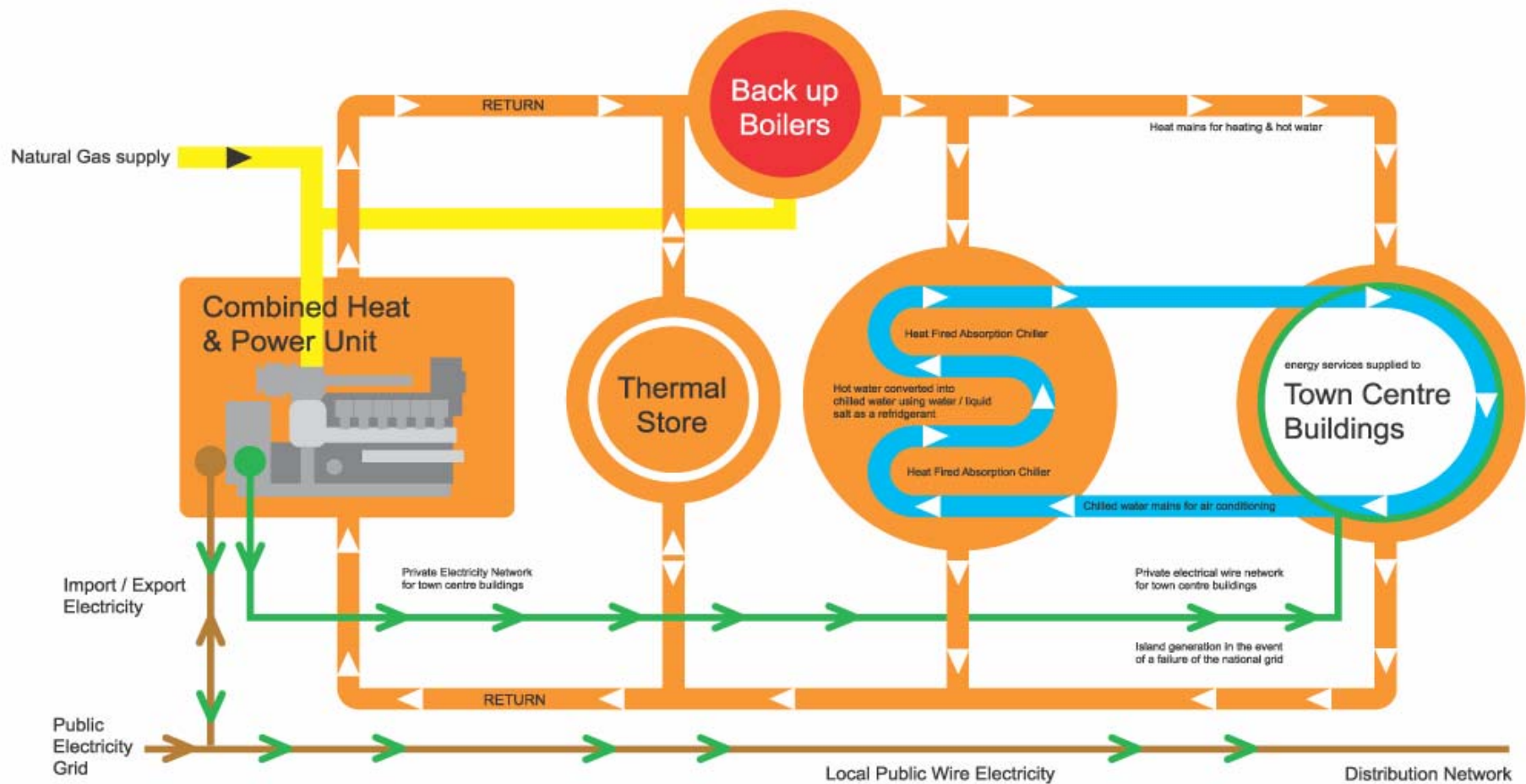
Grid supply price and private wire supply price



CHP

COMBINED HEAT AND POWER...









Policies - Legislation

London's Climate Change Strategy

- ❑ London plan
- ❑ Alterations to London Plan (under consultation)
 - Adaptation measures for new and existing developments
 - Decentralised energy systems
 - 20% renewable energy by CO2 emission reduction
 - Improve efficiency of existing transport capacity
 - Water – Potable and Non Potable Infrastructure
- ❑ Energy Strategy
- ❑ Supplementary Planning Guidance - Sustainable design and construction
- ❑ New Climate Change Duty



Mayors Energy Strategy

CO₂ and Sustainable Energy Targets

- ❑ 60% Reduction in CO₂ Emissions by 2050
- ❑ 20% Reduction in CO₂ Emissions by 2015
- ❑ 100% Increase in CHP Capacity by 2015
- ❑ at least 27MW_p Photovoltaics by 2015
- ❑ 6 large Wind Turbines by 2015
- ❑ 500 small Wind Turbines by 2025
- ❑ Anaerobic Digestion CHP Plants by 2015
- ❑ Biomass CHP Plants by 2015
- ❑ At least triple these technology capacities by 2025.



Economic development potential

- 'The potential sustainable energy market generated as a direct result of deploying technologies as set out in the Mayor's Energy Strategy could be worth around £3.35 billion by 2015 and employ between 5,000 and 7,500 people'.
- From London Development Agency's Study of the Sustainable Energy Sector: "Green Alchemy Turning Green to Gold: Powering London's Future", 2003



Proposed Low Emission Zone







Fuel Cell Bus

EvoBus Mercedes-Benz
'Citaro' for London

hydrogen
fuel
zero emissions



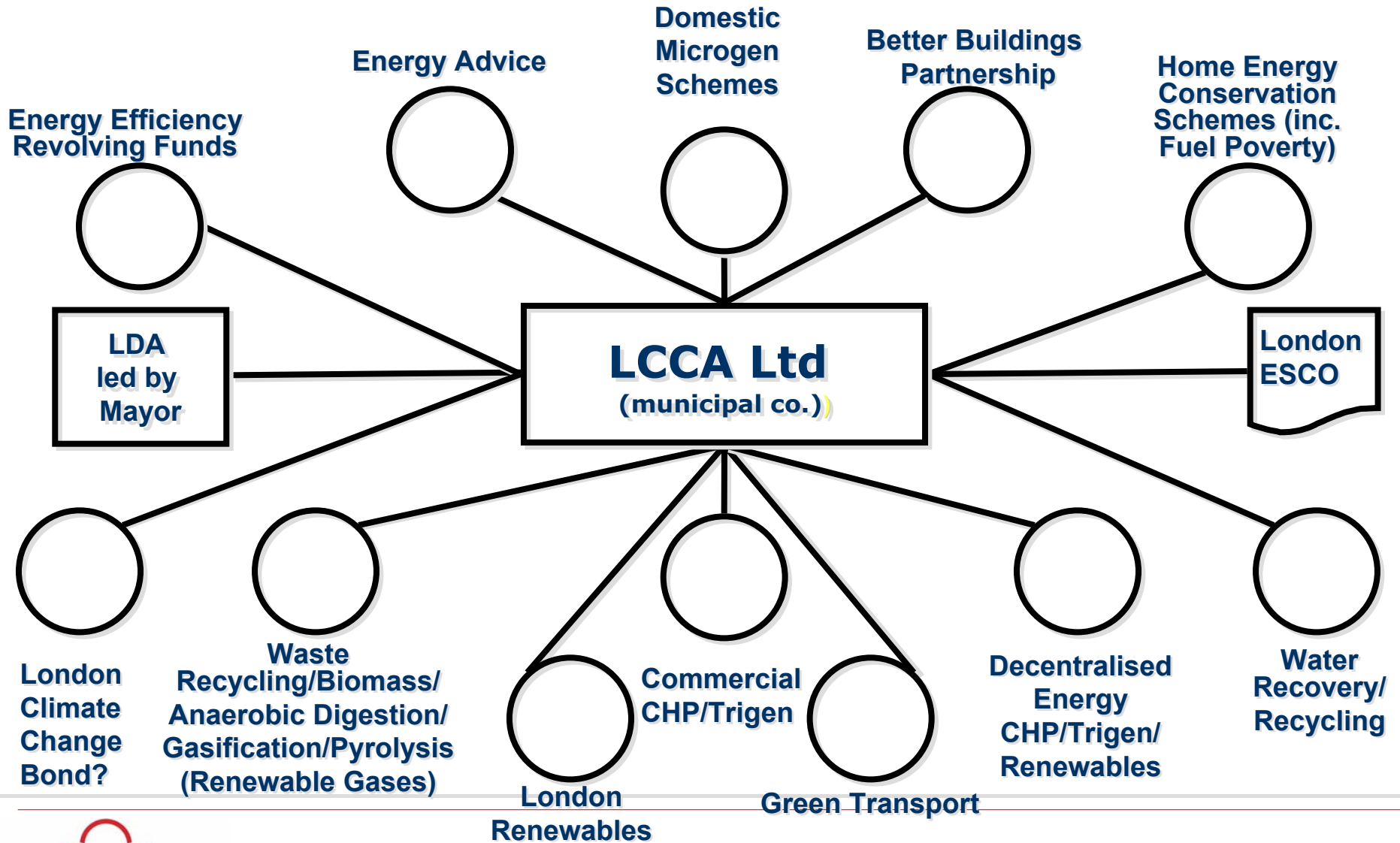
CITARO

FUEL CELL



BUS
LANE

London Climate Change Agency



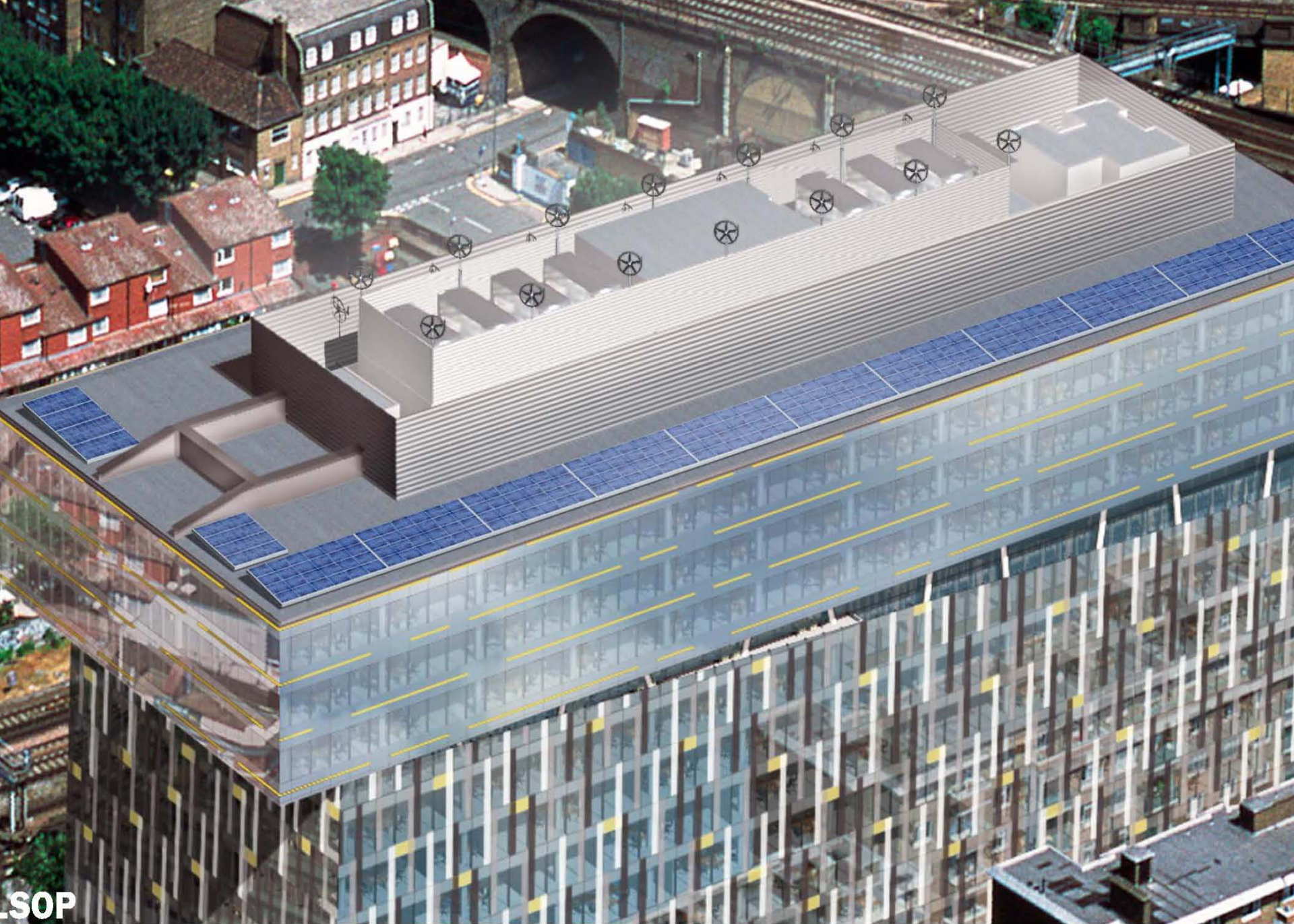
Creation of a Centre of Climate Change and Energy Engineering Excellence

- ❑ Establishment of the LCCA as a Municipal Company
- ❑ Carbon Accounting
- ❑ Energy Saving Trust Research Studies
- ❑ Recruitment
- ❑ London Boroughs
- ❑ Energy Efficiency Revolving Funds – GLA Group
- ❑ Better Buildings Partnership
- ❑ Planning – Technical Advice
- ❑ Major Developments – Technical Advice
- ❑ Stimulating the ESCO Model to RDA's
- ❑ Policy and Strategy – London Plan, Energy Review, Stern Review, etc.



Flagship Projects

- ❑ London Transport Museum – Photovoltaic Project
- ❑ Palestra – Photovoltaic and Building Integrated Wind Turbines
- ❑ City Hall – Photovoltaic Roof and Solar Shading
- ❑ In Progress:
 - Palestra – Fuel Cell CHP Trigeneration Study
 - City Hall – Fuel Cell CHP Study
 - LDA Development Projects:
 - ❑ Gallions Park – Zero Carbon Development
 - ❑ Dagenham Dock Sustainable Development Park – Wind Turbines
 - ❑ Silvertown Quays
 - ❑ Other Developments
 - Water Action Plan
 - Park Royal



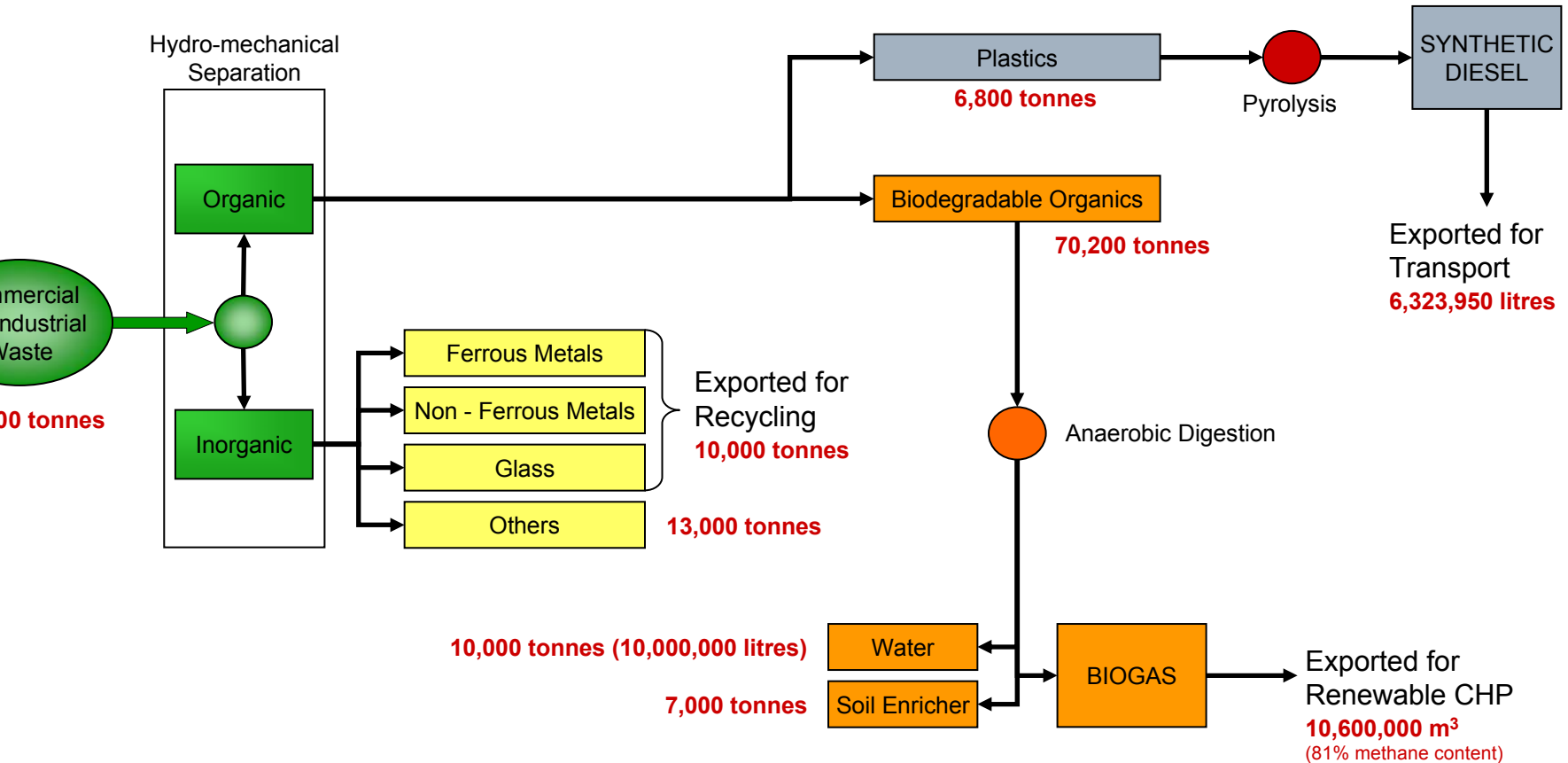


LCCA Water Action Plan

- ❑ 50% of UK water resources is used to evaporate heat from power station cooling towers (2.5M litres of water/hr per 1000 MW)
- ❑ Only 2% of water treated to drinking standard is actually drunk
- ❑ 30% of public water supply consumption is from households
- ❑ 60,000 litres per person per year (33% used in flushing WC's)
- ❑ London's water consumption – 351,000 tonnes CO₂ emissions pa
- ❑ London's 40% water leakage rate – 140,600 tonnes of CO₂ emissions pa
- ❑ Mayoral opposition to desalination due to negative impacts on climate change
- ❑ Water efficiency
- ❑ Tackling water poverty
- ❑ Sustainable water systems – potable and non potable water
- ❑ New water resources (inc. hydrogen)



Park Royal – Renewable Energy from Waste Plant



Inward investment projects

- ❑ Photovoltaics manufacturing Plant
- ❑ Photovoltaics/Wind Energy Lighting Columns Assembly Plant
- ❑ Fuel Cell CHP
- ❑ Hybrid Fuel Cell Transport
- ❑ Fuel Cell Taxi
- ❑ Biomass Market
- ❑ Renewable Gases Market (Anaerobic Digestion, Gasification/Pyrolysis and other New Waste Treatment Technologies)

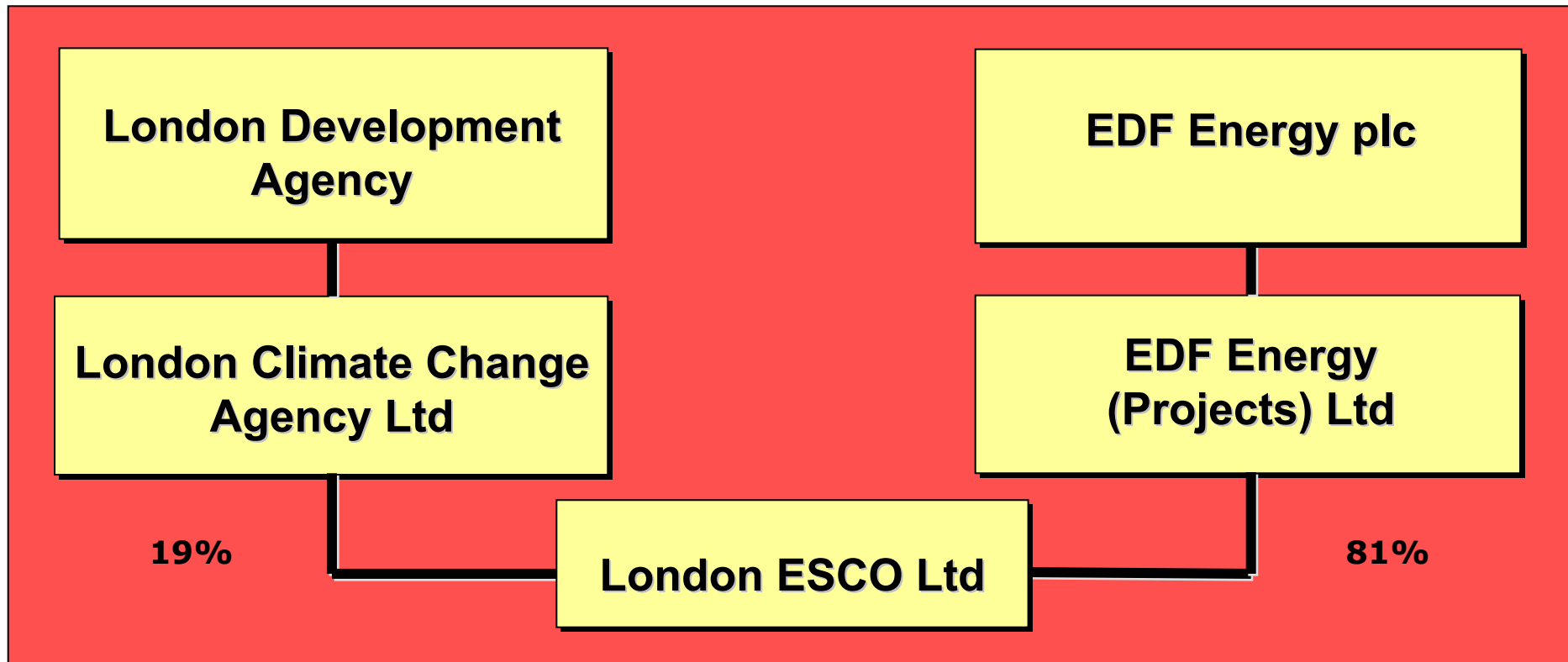




London ESCO

- ❑ Established as a Public/Private Joint Venture Energy Services Company between the London Climate Change Agency Ltd and EDF Energy plc
- ❑ Pan London ESCO that Designs, Finances, Builds and Operates Decentralised Energy Systems
- ❑ 50 Pipeline Projects in both New and Existing Development

London ESCO Ltd – Company structure



London ESCO – 1st Tranche of projects

- ❑ 11 projects, including LDA projects and EDF Energy
- ❑ 170MW of CHP capacity
- ❑ 8MW Wind Farm
- ❑ Other Renewables
- ❑ Fuel Cell CHP
- ❑ Reduction in CO₂ Emissions by 310,000 tonnes pa
- ❑ £100 million Investment

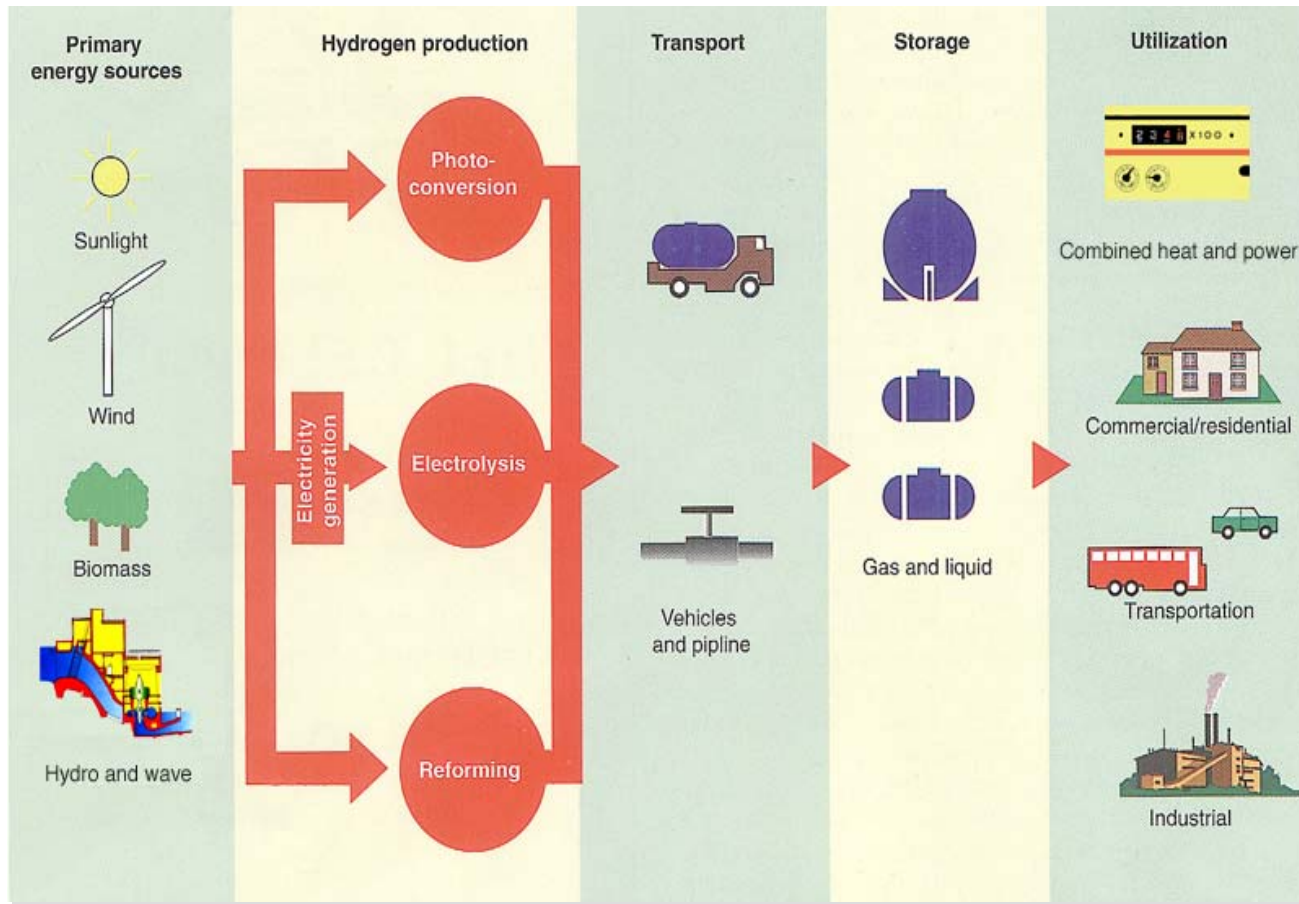








100% renewable hydrogen economy



Decentralised energy systems & the renewable hydrogen energy economy

- ❑ Hydrogen will be the energy carrier of the future deriving its energy from renewable sources.
- ❑ Fuel cells and the Hydrogen Economy derived from renewable fuels is the only technology/fuel that can meet the UK's future electricity, thermal and transport energy needs.
- ❑ The barriers to this are not technical but regulatory and vested interest.

